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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/961,138	09/24/2001	Masahiro Sekino	214324US0S	5368

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EXAMINER

CHANEY, CAROL DIANE

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 06/26/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/961,138

Applicant(s)

SEKINO ET AL.

Examiner

Carol Chaney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 September 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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***Specification***

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto et al., US Patent 5,993,997, in view of Mao, EP 0 759 641.

Fujimoto et al. disclose lithium batteries with non-aqueous solvents. Electrolytes containing ethylene carbonate and  $\gamma$ -butyrolactone as solvents and  $\text{LiPF}_6$  as the electrolyte salt are disclosed at Fig. 14, and column 21, Example 18. Solvents containing at least 20% by volume of ethylene carbonate are taught as preferred. Batteries with lithium cobalt oxide cathode materials and graphite anode materials are disclosed. (Column 8, lines 30-63.)

The disclosure of Fujimoto et al. differs from applicants' claim in that Fujimoto does not suggest the addition of a third solvent as recited by the applicants. Mao

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teaches furan and other aromatic compounds additives will provide overcharge protection to nonaqueous lithium batteries. About 1% furan by volume is suggested as preferable. (Page 3, lines 43-46 and page 4, lines 4-5.) Therefore, it would have been obvious to one of ordinary skill in the art to add furan, as suggested by Mao, to the batteries taught by Fujimoto et al. in order to provide overcharge protection for the batteries.

Claims 2-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto et al. and Mao as applied to claim 1 above, and further in view of Sonozaki et al., US Patent 6,048,639.

As discussed above, the combined prior art of Fujimoto et al. and Mao suggest applicants' electrolyte solvent to one of ordinary skill in the art. Neither Fujimoto et al. nor Mao teach containing batteries in a casing having walls less than 0.3 mm in thickness. Sonozaki et al. disclose thin, sealed batteries. In a preferred embodiment, the battery casing is 100 microns (0.1mm) thick, and is formed as a polypropylene/aluminum/polypropylene laminate. (Column 7, lines 35-52.) The battery casing system taught by Sonozaki et al. is "excellent in storage life and reliability by establishing a construction of a cell case free from the deterioration of cell performance caused by corrosion of sectional surfaces..." (Column 1, line 66-column 2, line 5.) Thus, it would have been obvious to one of ordinary skill in the art to use the casing disclosed by Sonozaki et al. to house the battery and electrolyte suggested by Fujimoto et al. and Mao in order to obtain a battery "excellent in storage life and reliability".

Claims 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibuya et al., US Patent 6,465,134 in view of Mao, EP 0 759 641A1 and Sonozaki et al., US Patent 6,048,639.

Shibuya et al. disclose gel electrolytes for lithium batteries. The gel electrolyte includes a non-aqueous solution of gamma-butyrolactone (GBL), ethylene carbonate (EC) and propylene carbonate immersed in a matrix polymer. As shown by Fig. 6 and examples 16 and 17 of Table 1 (column 9), electrolyte solutions having 67% and 54.5% of the total amount of EC + GBL are disclosed.

The disclosure of Shibuya et al. differs from applicants' claims in that Shibuya et al. do not suggest the addition of any of the third solvents recited by the applicants. Mao teaches furan and other aromatic compounds additives will provide overcharge protection to nonaqueous lithium batteries. About 1% furan by volume is suggested as preferable. (Page 3, lines 43-46 and page 4, lines 4-5.) Therefore, it would have been obvious to one of ordinary skill in the art to add furan, as suggested by Mao, to the batteries taught by Shibuya et al. in order to provide overcharge protection for the batteries of Shibuya et al.

Neither Shibuya et al. nor Mao teach battery casings with walls less than 0.3 mm thick. Sonozaki et al. disclose thin, sealed batteries. In a preferred embodiment, the battery casing is 100 microns (0.1mm) thick, and is formed as a polypropylene/aluminum/polypropylene laminate. (Column 7, lines 35-52.) The battery casing system taught by Sonozaki et al. is "excellent in storage life and reliability by

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establishing a construction of a cell case free from the deterioration of cell performance caused by corrosion of sectional surfaces..." (Column 1, line 66-column 2, line 5.)


Thus, it would have been obvious to one of ordinary skill in the art to use the casing disclosed by Sonozaki et al. to house the battery and electrolyte suggested by Shibuya et al. and Mao in order to obtain a battery "excellent in storage life and reliability".

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (703) 305-3777. The examiner can normally be reached on Mon - Fri 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 703-308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Carol Chaney  
Primary Examiner  
Art Unit 1745

cc  
June 23, 2003